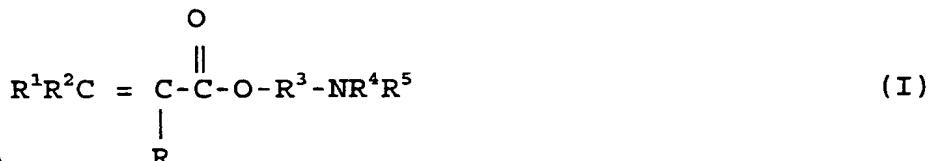


CLAIMS

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1. A process for the preparation of an aqueous dispersion of an anionic polyurethane in which initially a tertiary aminofunctional acrylic monomer of formula I



wherein,

R, R¹, R², R³, R⁴ and R⁵ are organic groups which have no reactivity towards the double bond or the tertiary amine function,

15 is used as neutralizing agent for pendant carboxylic acid groups in dispersions of a polyurethane or a polyurethane/polyacrylate, whereafter the unsaturated monomers undergo in situ an addition polymerisation, optionally together with other unsaturated monomers,

20 characterized in that the aqueous dispersion of the anionic polyurethane is prepared by the steps of

- preparation of an isocyanate functional anionic polyurethane prepolymer, optionally in the presence of vinylic monomers

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- mixing of the isocyanate terminated anionic polyurethane prepolymer with a tertiary-amino functional unsaturated monomer and optionally other vinylic monomers

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- followed by dispersion of the obtained mixture into water, and chain extension of the polyurethane prepolymer with an active hydrogen compound during or after the dispersion in water,
- initiating radical polymerisation of the vinylic monomers, including the tertiary amino functional unsaturated monomers.

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2. A process according to claim 1, in which the isocyanate terminated prepolymer is reacted with 0-100% of a stoichiometric amount of a hydroxy functional unsaturated monomer before the dispersion in water.

3. A process according to claim 1 or 2, in which the tertiary amine functional acrylic oligomer or polymer is formed during the process by radical polymerisation of tertiary amine functional unsaturated monomers.

4. A process according to claim 1 to 3, in which 10 the tertiary amine functional unsaturated monomers react together with other vinylic monomers during the radical polymerisation to obtain a tertiary amine functional copolymer.

5. A process according to any of the preceding 15 claims, wherein the tertiary amine functional unsaturated monomer is a dialkylaminoalkyl acrylate, a dialkylaminoalkyl methacrylate, a dialkylaminoalkoxy acrylate and/or a dialkyl-aminoalkoxy methacrylate.

6. A process according to any of the preceding 20 claims, wherein the tertiary amine functional unsaturated monomer is preferably dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl acrylate, diethylaminoethyl methacrylate, 2-(diethylamino)ethanol vinylether and the like.

7. A process according to any of the preceding 25 claims, wherein the tertiary amine functional unsaturated monomer is present in a ratio to the anionic residues to be neutralized in the polyurethane prepolymer from 0.3 to 2 and preferably from 0.7 to 1.5.

8. A process according to any of the preceding 30 claims, wherein the anionic group in the polyurethane or in the polyurethane/polyacrylate hybrid is a carboxyl, a sulphonic, a sulphate and/or a phosphate group and is preferably a carboxyl group.

9. A process according to any of the preceding 35 claims, wherein the amount of carboxylic acid functions in

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the isocyanate functional polyurethane prepolymer is from 1 to 15% and preferably from 2 to 10%.

10. A process according to claim 2 and any further preceding claim wherein the hydroxy functional unsaturated monomer is a hydroxy functional acrylate or methacrylate such as hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxy-propyl acrylate, hydroxypropyl methacrylate, hydroxybutyl acrylate, hydroxybutyl methacrylate, a hydroxy-polyester acrylate or

10 methacrylate.

11. A process according to any of the preceding claims, wherein the other vinylic monomers are selected from acrylic or methacrylic alkyl esters, optionally functionalized with hydroxy, quaternary amines or halogen groups, acrylo-nitrile, styrene, esters and ethers of vinyl alcohol.

12. A process according to claim 11 and any of the preceding claims, wherein the other vinylic monomers are present in an amount of 0 to 90% and preferably from 0 20 to 60%.

13. A process according to any of the preceding claims, wherein the polyurethane and/or the acrylic monomers contain additional functional groups which may be polyalkoxy functions with a large concentration of ethoxy functions, may be tertiary amine or quaternary amine functions, perfluor functions, incorporated silicon functions, hydrazide functions or hydrazone functions, ketone, acetoacetate, hydroxy, methylol, amide, glycidyl, ureido or aldehyde functions.

30 14. A process according to any of the preceding claims, wherein a conventional non-ionic, anionic or cationic surfactants is applied during the dispersion of the prepolymer solution in water, which is preferably a compound based on a long-chain dialkyl sodium sulpho- 35 succinate, arylalkyl-polyethoxyalkyl derivatives, highly ethoxylated polyurethane derivatives and the like.

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15. Dispersions prepared by a process described in the preceding claims.

16. A coating or film obtained from a dispersion prepared by a process as claimed in any of the claims 1 to 15.

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